**1)      Explain what is OpenStack?**

OpenStack is a set of software tools for managing and building cloud computing platforms for private and public clouds. It’s a free and open source software cloud computing platform.

**2)      Mention what are the three components that make modular architecture of OpenStack?**

The three components that make modular architecture for OpenStack are

* **OpenStack Compute**: For managing large networks of the virtual machine
* **OpenStack Object Storage**: A storage system that provides support for both block storage and object storage
* **Image Service**:  The delivery service provides discovery and registration for virtual disk images

**3)      Give an overview of OpenStack Services?**

OpenStack offers services like

* **Keystone**: Provides authorization and authentication for users
* **Glance**: Manages images in different formats
* **Cinder**: Provides persistent block storage
* **Neutron**: Enables users to create and attach interfaces to networks
* **Nova**: Provides instances on user’s demand
* **Swift**: Storage platform integrated directly into applications
* **Ceilometer**: Openstack for billing
* **Heat**: Allows automated infrastructure deployment

**4)      What does “role” and “tenant” indicates in OpenStack?**

In OpenStack, a tenant is referred for the group of users while role indicates the authorization level of the user.

**5)      Explain what hypervisor is and what type of hypervisor does OpenStack supports?**

Hypervisor is a piece of computer software or hardware that creates and run virtual machines. A system on which one or more virtual machines is defined is referred as host machine.

The types of hypervisor that supports OpenStack are

* KVM
* VMware
* Containers
* Xen and HyperV

**6)      What are the two types of storage does OpenStack Compute provides?**

OpenStack provides two classes of block storage,

* **Ephemeral Storage**:  It is associated with a single unique instance. Based on the instance, the size is defined. When the instance associated with it is terminated, data on ephemeral storage ceases to exist
* **Volume Storage**:   This storage is not dependent on any particular instance and is persistent.  Volumes are user created and within Quota

**7)      What are the basic functions of Identity Service in OpenStack?**

The basic functions of Identity Service is

* **User Management:**  It tracks the users and their permissions
* **Service Catalog:** It provides a catalog of available services with their API endpoints

**8)      What are the main components of identity user management?**

* **Users**: It is a digital representation of a person, service or system who uses OpenStack cloud services
* **Tenants:** A container used to group or isolate resource or identity objects.  Depending on service operator a tenant may map to a customer, account, organization or project
* **Roles**:  A role includes a set of rights and privileges.  A role determines what operations a user is permitted to perform in a given tenant

**9)      Mention what are the**[**networking**](http://career.guru99.com/category/networking-2/)**options used in OpenStack?**

The networking options used in OpenStack are

* **Flat Network Manager:** IP addresses for VM instances are fetched from the subnet, and then injected into the image on launch
* **Flat DHCP Network Manager:**  IP addresses for VM instances are fetched from the subnet specified by the network administrator
* **VLAN Network Manager:** Compute creates a VLAN and bridge; DHCP [server](http://career.guru99.com/category/server/) is started for each VLAN to pass out IP addresses to VM instances.

**10)   What is the meaning of term “Cinder” in OpenStack service?**

For handling persistent storage for virtual machines, OpenStack provides the service referred as Cinder. There are multiple backends for cinder.  The one that is utilized by default is LVM, called Cinder-Volumes.

**11)   List out the storage locations for VM images in OpenStack?**

* OpenStack Object Storage
* Filesystem
* S3
* HTTP
* RBD or Rados Block Device
* GridFS

**12)   Explain what is Cells in OpenStack?**

Cells functionality enables you to scale an OpenStack Compute cloud in a more simplistic way.  When this functionality is enabled, the hosts in an OpenStack Compute cloud are partitioned into group called cells. Cells are configured as trees.

**13)   For networking, what hardware is used in OpenStack?**

In OpenStack, networking is done in following ways

* Networks
* Routers
* Subnets
* Ports
* Vendor Plugins

**14)   Explain how you can transfer volume from one owner to another in OpenStack?**

You can transfer a volume from one owner to another by using the command **cinder transfer\***.

**15)   What is the command to manage floating IP addresses in OpenStack?**

nova **floating-ip-\***

**16)   What is bare-metal node and what does it comprised of?**

It gives access to control bare metal driver, through which you can control physical hardware resources on the same network.

Bare metal node is comprised of two separate components

* Bare metal node Orchestrator: It’s a management software, which acts as a dispatcher to all nodes in the cluster.
* Bare metal node [Operating System](http://career.guru99.com/category/operating-system-2/): It is a base software, which runs on each node in the cluster.

**17)   Mention what is the command to remove network interface from bare-metal node?**

To remove network interface from bare-metal node command used is bare-metal – interface remove.

**18)   Explain what is the function of Cinder Scheduler?**

Cinder Scheduler or routing volume create requests to the appropriate volume service

**19)   Explain what is Token in OpenStack?**

Token is an alpha-numeric string which allows access to a certain set of services depending upon the access level of the user

**20)   Explain about OpenStack Python SDK?**

For writing python scripts and managing in Openstack cloud, SDK (Software Development Kit) is used.  The SDK implements Python binding to the OpenStack API, which enables you to achieve automation tasks in Python by making calls on Python objects instead of making REST calls directly.

**21)   What is the command used for pause and unpause an instance?**

* To pause an instance, command used is $ nova pause INSTANCE\_NAME
* To unpause an instance, command used is $ nova unpause INSTANCE\_NAME

**22)   What is the command used to list IP address information?**

$ nova floating-ip-pool-list

**23)   What is the meaning of term “flavor” in OpenStack?**

A flavour is an available hardware configuration for a server, which defines the size of a virtual server that can be launched.

**What is a hybrid cloud?**

1. It is a cloud that combines aspects of PaaS and SaaS.
2. It is an IaaS cloud that provides ephemeral storage only.
3. It is an architecture that combines public and private clouds.
4. It is a compute cloud that mixes compute nodes with different CPU architectures.
5. It is an IaaS cloud that provides instances with different operating systems.

A **hybrid cloud** is the combination of a private, commonly on-premises, cloud platform with public cloud providers and is designed for use by a single organization.

**Which of the following kinds of cloud computing do the core components of OpenStack provide?**

1. SaaS
2. PaaS
3. CaaS
4. **IaaS**
5. XaaS

Answer: D

IaaS stands for Infrastructure as a Service and is a form of cloud computing which provides physical or virtualized machines and other computing resources over a network. OpenStack provides computing resources, machine images, block and object storage, networking services and more.

**Which of the following statements are true regarding the relationship of users, projects and domains? (Choose TWO correct answers.)**

1. Every project has exactly one administrative user.
2. One user can be part of multiple domains.
3. **Projects can be nested.**
4. One project can contain multiple domains.
5. **Users are specific to a domain.**

Answer: C, E

In OpenStack, a domain is used to create an administrative boundary for managing Keystone entities. Domains are used to aggregate projects and users. Also, as of the release of the Identity v3 API (version 3.4), projects can be created with a parent project ID which must be owned by the same domain and provides the ability to create a nested project hierarchy.

**What happens when a new compute instance is started from a Glance image?**

1. The image is locked so no other compute instances can use it.
2. The image is copied, either from Glance or a cache, to the computing node that will start the instance.
3. The image is shared via NFS to PXE boot the new instance from it.
4. The image is installed from a Linux distribution's repository according to the image's metadata.
5. The image is disconnected from any other compute instances using it.

Answer: B

Glance virtual machine images may be used by any number of compute instances at the same time and they are accessible to the Compute service via the Glance OpenStack component.

**How can objects in Swift be accessed? (Choose TWO correct answers.)**

1. A PATCH request can contain a standard diff file that is applied to an object.
2. An INSERT request can provide an offset where the uploaded data should be written to the object.
3. A GET request can download an object as a whole file.
4. A RETRV request can specify block ranges of an object that should be extracted and retrieved.
5. A PUT request can upload an object as a whole file.

# Answer: C, E

Swift is accessed through the **Object Storage API**. **This API is implemented as a set of RESTful (Representational State Transfer) web services.** **With a RESTful API, access or read operations are serviced through an HTTP GET request and write operations are serviced through an HTTP PUT request.**

[An](https://opcel.org/en/sample.html)